

REMARKS

Claims 12-29, 33 and 34 are pending in the application. Claims 12-29, 33 and 34 are rejected. No claims are allowed.

Claim 12 has been amended to clarify the features of the cosmetic compositions, including that they are water-in-oil or oil-in water emulsions. Support for the amendments is found in the specification as filed, *inter alia*, at page 1, lines 2-4; page 2, lines 26-30; page 6, line 29-page 7, line 2; page 7, lines 11-12; beginning at page 20, examples 5-7, and; beginning at page 23; Tables 2-9. Amendments of the “wherein” clause of claim 12 merely correct grammar and clarify the meaning of the phrase. No new matter is introduced by the amendments and entry thereof is requested.

Rejection Under 35 USC 102

Claims 12-29 and 33 are rejected under 35 USC 102(b) as allegedly anticipated by Collin (US Patent 6,464,967). The Final Office Action (FOA) asserted that Collin discloses all of the limitations of the instantly recited composition except for the method by which the claimed composition is prepared, and that the claimed product is the same as or obvious from the prior art product produced by the Collin process. *Page 3, lines 9-14, of the FOA*. The FOA concludes that the burden has been shifted to Applicants to provide evidence establishing an unobvious difference between the claimed product and the prior art product.

Submitted herewith is the Rule 132 Declaration of Dr. Markus Dierker (the “Declaration”) addressing this allegation and establishing that the claimed poly- α -olefin products produced by dehydrating polymerization of alcohols are structurally and functionally different from the poly- α -olefin products produced by the Collin process of homopolymerization of α -olefin (i.e., 1-alkene) monomers.

As Dr. Dierker explains at paragraph 6 of the Declaration, the homopolymerization of α -olefin monomers taught by Collin produces poly- α -olefin waxes for use in cosmetic compositions that are wax-in-water emulsion, such as mascara (*Column 2, lines 10-15 of Collin*). Accordingly, Collin does not disclose the claimed cosmetic compositions, which are oil-in-water or water-in-oil emulsions in which the poly- α -olefins are the oil component of the emulsion. This difference in the physical

characteristics of the poly- α -olefin compounds is evidenced by the melting point of the poly- α -olefin oils of the invention as compared to the melting point of the poly- α -olefin waxes of Collin. As Dr. Dierker discusses at paragraph 10 of the Declaration, Collin's waxes are solids at room temperature with melting points between 50°C and 80°C (*Column 2, lines 10-15 and 42-46 of Collin*). In contrast, the melting point of the poly- α -olefin oils of the invention is below 0°C and they are liquid at room temperature. Dr. Dierker further explains that the structural differences in the poly- α -olefin oils of the invention as compared to the poly- α -olefin waxes of Collin result in the substantial difference in physical form and melting point. Specifically, the process by which the poly- α -olefin oils of the invention are produced (i.e., dehydrating polymerization of alcohols) results in branching or cross-linking in the pendant alkyl side chains that is not produced by the 1-alkene homopolymerization process of Collin.

Referring to paragraph 7 of the Declaration, Dr. Dierker describes in more detail the structure of the poly- α -olefin waxes produced by the 1-alkene homopolymerization process of Collin. They are generally comb-like, with the carbon atoms of the olefin monomer forming the backbone and pendant linear alkyl chains forming the "teeth" of the comb. As shown in the illustration at paragraph 7, these prior art poly- α -olefin structures have no branching in the alkyl side chains.

Beginning at paragraph 8 of the Declaration, Dr. Dierker describes in more detail the structurally different poly- α -olefin oils that are obtained by dehydrating polymerization of each of the claimed alcohols. In this process, the structural characteristics of the primary alcohol monomer result in branching or cross-linking within the pendant alkyl chains of the polymer. The process steps and the structure of the poly- α -olefins produced by dehydrating polymerization of a branched monofunctional alcohol (claim 12(b)), an unsaturated monofunctional alcohol (claim 12(a)) and a difunctional alcohol (claim 12(c)) are shown in paragraph 9. In each case, the poly- α -olefin structure obtained by the process of the invention is clearly different from the comb-like structure of the poly- α -olefins produced by homopolymerization of 1-alkene monomers.

At paragraph 10 of the Declaration, Dr. Dierker states his conclusions that the side chain branching and cross-linking of the poly- α -olefins of the invention results in their low melting point and physical characteristics as oils. Because of their unbranched and uncross-linked chemical structure the poly- α -olefins of Collin, in contrast, are high melting point waxes.

In the Non-Final Office Action mailed July 26, 2010, the Office pointed out that the rejection was based on whether the material disclosed as known in the art could be prepared using the method recited by the claims, thus lying within the scope of the claims and anticipating the claims. *Page 4, line 20 – Page 5, line 2, of the Non-final Office Action.* In response, the Office's attention is drawn to Dr. Dierker's conclusion at paragraph 12 of the Declaration, i.e., that un-branched poly- α -olefins such as those of Collin could not be prepared by the process of the invention. Dr. Dierker therefore concludes that Collin does not anticipate the claimed invention, because the reference discloses only un-branched poly- α -olefin waxes and because the poly- α -olefin waxes disclosed by the reference cannot be prepared using the claimed process of dehydrating polymerization of alcohol monomers.

A *prima facie* case for believing that the products of the Applicant and the prior art are the same, as set forth in the present rejection, can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. Products of identical chemical composition can not have mutually exclusive properties because a chemical composition and its properties are inseparable. It therefore follows that products having mutually exclusive properties must necessarily have different chemical compositions or structures. That is the case here. The poly- α -olefin waxes of Collin have high melting points and a linear, un-branched/uncross-linked structure predictable from the chemistry of the 1-alkene homopolymerization reaction. In contrast, the poly- α -olefin oils of the invention have very low melting points and a branched/cross-linked structure predictable from the chemistry of dehydrating polymerization of alcohols. The claimed poly- α -olefins are therefore structurally different compounds with mutually exclusive

properties and are not anticipated by Collin. Withdrawal of the rejection of claims 12-29 and 33 is therefore respectfully requested.

Rejections Under 35 USC 103

Claims 12-29, 33 and 34 are rejected under 35 USC 103(a) as allegedly unpatentable over Hansenne (US Patent 5,747,009) in view of PCT Patent Application Publication WO 03/035707 (US equivalent Zander et al. US Patent Application Publication 2004/0267073). Hansenne is relied upon for disclosing cosmetic emulsions comprising poly- α -olefin and an emulsifying agent, and the problem of stability of such emulsions during storage. Hansenne discloses that the emulsifier addresses this problem. Zander is relied upon for disclosure of poly- α -olefins produced by the claimed process and that such poly- α -olefins have minimal vulnerability to oxidation. The rejection then concludes that it would have been *prima facie* obvious to use Zander's poly- α -olefins in the cosmetic emulsion of Hansenne as a way to improve stability during storage due to their improved resistance to oxidation.

Beginning at paragraph 13 of the Declaration, Dr. Dierker provides his expert interpretation of the disclosure of Zander with respect to preservation and stability of cosmetic emulsions. First, Dr. Dierker declares that the Office's reading of Zander is a misinterpretation of the reference (*paragraph 14*), and that resistance of a poly- α -olefin to oxidation refers to the stability of the poly- α -olefin compound itself under thermo-oxidation conditions. Dr. Dierker further declares that resistance of a poly- α -olefin compound to oxidation does not suggest to the skilled person that the poly- α -olefin will improve the stability of an emulsion containing it, as stability of an emulsion refers to the tendency of the phases of the emulsion to separate (not to resistance to oxidation). Dr. Dierker therefore concludes that the ability of the poly- α -olefin oils of the invention to improve emulsion stability as compared to conventionally produced poly- α -olefins was unexpected (*paragraph 15*).

These unexpected results are shown in Table 1 of the application (*see page 22*) in which the stability of a cosmetic emulsion comprising a poly- α -olefin according to the invention is compared to a cosmetic emulsion comprising a poly- α -olefin produced by homopolymerization of 1-alkene monomers (Nexbase® 2006FG) (*confirmed by Dr.*

Dierker at paragraph 15 of the Declaration). The two compositions were identical except for the poly- α -olefin, the different structural characteristics of which are discussed above and described in paragraph 15 of the Declaration. This experimental comparison is particularly relevant because Hansenne specifically mentions poly- α -olefins of the polydecene type for use in the reference compositions (*Column 2, line 66-Column 3, line 2*). Nexbase® 2006FG is such a prior art polydecene type poly- α -olefin.

At paragraph 16 of the Declaration, Dr. Dierker explains the results of the comparative testing. In summary, the 1-alkene-based poly- α -olefin emulsion (Nexbase® 2006FG) became unstable (i.e., the phases separated) as early as four weeks, whereas the alcohol-based poly- α -olefin emulsion according to the invention remained stable at all temperatures for the duration of the experiment (12 weeks). Dr. Dierker hypothesizes at paragraph 17 of the Declaration that the unexpected improvement in emulsion stability may be a result of the different chemical structure of the poly- α -olefins of the invention, as discussed above, and states that Zander does not teach or suggest that alcohol-based poly- α -olefins will have any effect on emulsion stability that is different from a conventional poly- α -olefin produced by homopolymerization of 1-alkenes. In view of the above unexpected experimental results, and the fact that oxidation stability of a poly- α -olefin does not suggest improved stability of an emulsion containing that poly- α -olefin, he concludes that claims 12-29, 33 and 34 are not obvious over Hansenne in view of Zander (paragraph 19).

A *prima facie* case of obviousness based on structural similarity is rebuttable by proof that the claimed compounds possess unexpectedly advantageous or superior properties. *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963) (Affidavit evidence which showed that claimed triethylated compounds possessed anti-inflammatory activity whereas prior art trimethylated compounds did not was sufficient to overcome obviousness rejection based on the homologous relationship between the prior art and claimed compounds.); *In re Wiechert*, 370 F.2d 927, 152 USPQ 247 (CCPA 1967) (a 7-fold improvement of activity over the prior art held sufficient to rebut *prima facie* obviousness based on close structural similarity). Even if the branched/cross-linked structure of the poly- α -olefins of the invention could be

considered similar to the un-branched/uncross-linked structure of the poly- α -olefins of the prior art (and Applicants maintain that it cannot), the evidence of unexpectedly superior stability of emulsions containing the poly- α -olefins of the invention provided in the specification and further explained by Dr. Dierker establishes that the compositions of claims 12-29, 33 and 34 are not obvious over Hansenne in view of Zander.

Withdrawal of the rejection is therefore respectfully requested.

CONCLUSION

Applicants submit that claims 12-29, 33 and 34 of the present patent application are now in condition for allowance, and an action passing this case to issue is respectfully requested. If fees not otherwise provided for are found to be due in connection with this submission, the Commissioner is authorized to charge Deposit Account No. 50-3329. Please contact the undersigned by telephone if there are any issues remaining in this case.

Respectfully submitted,

Dated: November 1, 2011

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